

**Taxonomic study of the *Tithonia calva* complex (Asteraceae, Heliantheae)**

**Billie L. Turner**  
Plant Resources Center  
The University of Texas  
Austin TX 78712

**ABSTRACT**

The *Tithonia calva* Sch.-Bip. complex has been variously treated, some workers recognizing 2 species under its fabric, and yet others accepting but 2 or 3 varieties. The taxonomy of the complex is reviewed and it is concluded that the group is best treated as containing 2 non-intergrading species: *T. calva*, occurring in southernmost Sinaloa and closely adjacent Durango, in pine forests from 1000-2000 m; and *T. auriculata*, occurring in oak forests from 100-1000 m. A key to the taxa is provided, along with maps showing their distribution. Published on-line [www.phytologia.org](http://www.phytologia.org) *Phytologia* 97(1): 12-15 (Jan 2, 2015). ISSN 030319430.

**KEY WORDS:** Asteraceae, Heliantheae, *Tithonia*, *T. auriculata*, *T. calva*, Mexico

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Preoccupation with the Asteraceae of Mexico (Turner 1997, etc.) has occasioned the present paper.

***Tithonia calva*** was treated by La Duke (1982) as the only member of sect. *Mirasolia* of ***Tithonia***, this typified by material collected by Seemann in Sinaloa, Mexico, during the fall of 1849, presumably from pine forests along the route to the state of Durango, this perhaps paralleling Highway 40 of present-day maps.

Brandeggee (1900) described *Gymnolomia auriculata* (typified by collections from Cofradia, Sinaloa), this transferred to ***Tithonia*** by Blake (1918); La Duke (1982) reduced the latter to varietal rank as *T. calva* var. *auriculata*, stating "Its closest relation is to *T. calva* var. *lancifolia*," the latter originally described as a variety of *Gymnolomia calva* by Robinson and Greenman, and typified by material from Acaponeta, Nayarit. Blake (1918) treated var. *lancifolia* as a subspecies of ***T. calva***, while retaining ***T. auriculata***.

La Duke (1982) subsequently recognized ***T. calva*** as having three infraspecific categories: **1)** var. *calva*; **2)** var. *auriculata*; and **3)** var. *lancifolia*. McVaugh (1984), in his *Flora Nova-Galiciana*, included var. *auriculata* within his concept of *T. c.* var. *lancifolia* (albeit with some reservation), having noted, aptly, that var. *auriculata*, what "with its almost linear, sessile leaves that are cordate-auriculate at base...is apparently not very different from var. *lancifolia*." McVaugh's treatment, and his perceptive comments that var. *lancifolia* is largely confined to open hillsides in oak or palm-oak forests, largely between 250-1000 meters while var. *calva* is a plant of pine-oak forests at higher elevations (1000- 2000 m), strongly suggests that only two meaningful taxonomic units make up the complex. After examination of numerous sheets from throughout the area concerned, I agree with McVaugh's assessment, but would treat the taxa as specifically distinct, since they occupy different ecological zones and do not appear to intergrade.

The following summarizes my interpretation of the **T. calva** complex:

### Key to taxa

1. Leaves mostly 1-2(3) cm wide; heads mostly 3-5(6) cm across the extended rays; middle and upper stems variously pubescent, the hairs mostly 2 mm long or less; plants mostly of oak forests, 100-1000 m.....**T. auriculata**
1. Leaves mostly 4-7 cm wide; heads (4) 5-8 cm across the extended rays; middle and upper stems pubescent with elongate, silky, trichomes 5-6 mm long; plants mostly of pine forests, 1000-2000 m.....**T. calva**

**TITHONIA AURICULATA** (T.S. Brandege) S.F. Blake, Contr. Gray Herb. 54: 9. 1918.

*Gymnolomia calva* var. *lancifolia* Rob. & Greenm. 1899

*Gymnolomia auriculata* T.S. Brandege 1905

*Tithonia calva* subsp. *lancifolia* (Rob. & Greenm) S.F. Blake 1921

*Tithonia calva* var. *lancifolia* (Rob. & Greenm.) McVaugh 1972

s Son, Sin, Nay and Jal, mostly tropical deciduous forests, 200-1000 m; Aug-Apr.

McVaugh has provided an excellent account of the taxon, and such need not be repeated here.

If treated as a variety, the correct name for this taxon would be *T. c.* var. *lancifolia*; if treated as a species, as done here, the correct name, under the present Code of Botanical Nomenclature, is **T. auriculata**. As noted above, the two taxa, as circumscribed by both McVaugh and myself, do not intergrade in regions of near contact, hence my specific bestowal. **Map 1**

This taxon is much more variable than **T. calva**, both in vegetative and floral features. Plants having relative broad leaves were treated as var. *lancifolia* by La Duke; at the same time he maintained var. *auriculata*. Indeed, a case might be made for the recognition of infraspecific taxa within my concept of **T. auriculata**, thus *Hernandez 654* from Mpio. de Elota, Sinaloa (TEX), has unusually pubescent leaves, these up to 2 cm wide, and stems with white villous hairs ca 2 mm long, but the overall gestalt is clearly that of **T. calva**, as interpreted here.

As noted above, nearly all of the collections of **T. auriculata** have been obtained in deciduous oak forests at elevations of 100-1000 meters, mostly along the Pacific frontal range as shown in Map 1; the seemingly disjunct nature of the populations concerned is likely to represent a gap in specimen acquisition, the area concerned having few roads of access.

**TITHONIA CALVA** Sch.-Bip. in Seemann, Bot. Voyage Herald. 305. 1856.

*Mirasolia calva* (Sch.-Bip. in Seemann) Benth & Hook. ex Hemsl. 1881

*Gymnolomia calva* (Sch.-Bip. in Seemann) A. Gray 1883

Chi, Sin, Dur and Nay, pine-oak woodlands, 1000-2000 m; Aug-Nov.

McVaugh (1984) has given an excellent description of the species, and this need not be repeated here. In addition to the characters used in the above key to distinguish between the two taxa, he noted, correctly, for **T. calva**, the thickened apical peduncles (2-6 mm across), and the mostly longer pales and larger disc florets. McVaugh also recognized the species as occurring only at high elevations of "S e Sin. and adjacent Dgo," much as I do, this contrary to the views of La Duke (1982). **Map 2**

**ACKNOWLEDGEMENTS**

Jana Kos edited the paper, for which I am grateful. Distribution maps are based upon specimens on file at LL-TEX, and upon specimens cited by McVaugh (1984).

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